

LIVANOV, V. A. and YELAGIN, V. I. (Cand. Tech. Sci.)

. "Investigation of AMg6 Heat-resistant Alloy with Additions of Iron and Nickel."
In book - Physical Metallurgy and Technology of Heat Treatment. Moscow, Oborongiz,
1958, 179.

The authors investigation shows that small additions of iron (0.008-0.9%) and nickel (0.17-0.72%) do no improve the mechanical properties of AMg6 alloy (Al - 6% Mg) at elevated temperatures. There are 7 references, of which 5 are Soviet, 1 is English, and 1 German.

LIVANOV, V.A . and YELAGIN, V. I. (Cand. Tech. Sci.)

"The Extrusion Effect at Elevated Temperatures," In book- Physical Metallurgy and Technology of Heat Treatment. Moscow. Oborongiz, 1958, 179 p.

An investigation of the "extrusion effect" (increased strength as a result of the extrusion process) in aluminum-magnesium alloys with additions of chromium and manganese (together and separately) shows that these alloys retain their increased strength even after cold drawing. It is further shown that the extrusion effect is preserved at elevated temperature (300° C) and is observed both in the short-time strength test and in the long-time hardness test. There are 10 references, of which 8 are Soviet and 2 German.

YELAGIN, V.I.

18(4); 18(7)

PHASE I BOOK EXPLOITATION

SOV/1326

Moscow. Aviatsionnyy tekhnologicheskii institut

0 strukture i svoystvakh pressovannykh i shtampovannykh izdeliy iz al'yumin'nykh splavov (The Structure and Properties of Extruded and Die-forged Products Made of Aluminum Alloys), Moscow, Oborongiz, 1958. 246 p. (Series: Its: Trudy, vyp. 34) 3,700 copies printed.

Ed.: Voronov, S.M., Doctor of Technical Sciences, Professor; Ed. of Publishing House: Shekhtman, E.A.; Tech. Ed.: Pukhlikova, N.A.; Managing Ed.: Zaymovskaya, A.S., Engineer.

PURPOSE: This book is intended for scientific personnel at research institutes and production engineers at metallurgical plants manufacturing intermediate products from aluminum alloys.

COVERAGE: The book deals with certain special structural characteristics of extruded and die-forged aluminum-alloy products. Data are given on the macro-, micro-, and x-ray analysis of these products. On the

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The Structure and Properties (Cont.)

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basis of an analysis of the relationship between the structure and properties of extruded alloys, explanations are given for the development of the so-called extrusion effect and flaky fracture. (The extrusion effect is defined as "the increased strength [in a longitudinal direction] and decreased plasticity of extruded products in comparison with products obtained by other forms of plastic deformation".) Technological recommendations are given for obtaining extruded and die-forged aluminum-alloy products with good mechanical properties. The first of the two studies in this book is concerned with the extrusion effect and presents what is described as a new theory of the nature of this phenomenon, differing from views expressed previously in the Soviet and non-Soviet literature. It is stated that this new theory makes it possible to explain a number of phenomena commonly observed in aluminum-alloy intermediate products, such as coarse-grained structure of flat products (AMts alloy), lowered strength characteristics of D16 alloy sheets produced from homogenized ingots, etc. The second study is an

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an investigation of the nature of the flaky type of fracture observed in various aluminum-alloy products. Results of this work. it is said, make it possible to explain the cause of this kind of fracture, to establish the relationship between alloy composition, structure, and strength characteristics, and to recommend measures to eliminate flakiness.

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Voronov, S.M., Doctor of Technical Sciences, Professor (Deceased);
and V.I. Dobatkin, Doctor of Technical Sciences. Flaky Fracture
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AVAILABLE: Library of Congress

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SOV/137-58-10-21516

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 151 (USSR)

AUTHORS: Voronov, S. M., Yelagin, V. I.

TITLE: Processes Occurring During Homogenizing Anneal of Aluminum Alloys (Protsessy, proiskhodyashchiye pri gomogenizatsii alyuminiyevykh splavov)

PERIODICAL: V sb.: Legkiye splavy. Nr 1. Moscow, 1958, pp 222-239

ABSTRACT: Alloys of the type AMts and D16 containing 1-2% Mn, ~ 4.6% Cu, and ~ 1.4% Mg, were subjected to homogenizing anneal at temperatures of 500°C (12-240 hrs) and 630°C (3-24 hrs), followed by extruding operations resulting in a reduction of 93.4% at 420°C; finally, a portion of the specimens was quench-hardened at 500°C. Microstructural and X-ray diffraction study methods were employed in the investigation. In the course of the homogenizing anneal of Al alloys containing Mn, the process of dissolution is accompanied by a concurrent process of decomposition of the solid solution of Mn in Al. Prolonged homogenization of ingots produces intensive decomposition of the solid solution and coagulation of particles of manganese

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Processes Occurring During Homogenizing (cont.)

chemical compounds which are separated out from the solution, sharply reduces the strength of the ingots, and increases the plasticity of the extruded rods. At a temperature of 500° , homogenizing anneal of the Mn-free D16 alloy is not accompanied by decomposition of the solid solution. As the Mn content of the alloys is increased, the decomposition of the solid solution of Mn in Al is intensified. As the Mn content of rods extruded from ingots which have not been subjected to homogenizing anneal is increased from 0 to 0.94%, the σ_b of the rods increases from 47 to 64 kg/mm² and the σ_s from 29 to 43 kg/mm²; in the case of rods extruded from ingots which have been subjected to a homogenizing anneal at 500° for a period of 240 hours, an increase in Mn content increases the σ_b from 46 to 51 kg/mm², and the σ_s from 28 to 31 kg/mm², i. e., this process of homogenization relieves the press effect entirely; this is explained by the intensive coagulation in the ingot of the products of decomposition of the solid Mn solution in Al.

1. Aluminum--Heat treatment
 2. Aluminum--X-ray diffraction analysis
- L. V.

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LIVANOV, V.A., kand.tekhn.nauk; YELAGIN, V.I., kand.tekhn.nauk

Investigating the heat resistance of AMg6 alloys with iron and
nickel additions. Trudy MATI no.31:138-142 '58. (MIRA 11:7)
(Aluminum-manganese alloys--Testing) (Heat-resistant alloys)

PETROV, D.A., doktor tekhn.nauk; YELAGIN, V.I., kand.tekhn.nauk

Effect of pressure at high temperatures. Trudy MATI no.31:143-160
'58. (MIRA 11:7)
(Aluminum) (Sheet-metal work) (Metals at high temperatures)

VORONOV, S.M., doktor tekhn.nauk, prof; YELAGIN, V.I., kand.tekhn.nauk

Studying the effect of pressure on aluminum alloys. Trudy MATI
no.34:5-157 '58. (MIRA 11:8)
(Aluminum alloys--Metallography)

18 (7)

AUTHORS:

Yelagin, V. I., Ekhnina, Ye. V.

SOV/32-25-6-20/53

TITLE:

Microstructure Determination of the Tendency of Alloys of the System Al - Mg to Corrosion Under Tension (Opredeleniye po mikrostrukture sklonnosti splavov sistemy Al - Mg k korrozii pod napryazheniyem)

PERIODICAL:

Zavodskaya Laboratoriya, 1959, Vol 25, Nr 6, pp 703-704 (USSR)

ABSTRACT:

The tendency of the Al-Mg alloys (with an increased magnesium content) to corrosion under tension is determined according to the structural character, i.e. the presence of almost continuous boundaries of the β -phase (or a chemical intermediate compound) along the grain boundaries. In the case under review the alloy AMg6T was investigated with a thermal treatment. The degree of decomposition of the solid solution and the distribution of the decomposition products in the grains of the solid solution were taken into consideration. The samples were supplied by foils 210x15x2 mm that were submitted to different thermal treatments and thereupon dropped into a corrosion medium (3 % NaCl and 0.1 % H_2O_2 in water). Experimental results obtained reveal (Table) that

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Microstructure Determination of the Tendency of Alloys SOV/32-25-6-20/53
of the System Al - Mg to Corrosion Under Tension

only after turning on to 200° an increased tendency towards corrosion under tension occurs. Turning on to 50° and 100° affects the structure but little. Turning on to 300° effects the coagulation of the particles of the β -phase and the formation of isolated particles at the grain boundaries, in which case the corrosion resistance rises again. Figures are given showing the microstructure after various treatments (Figs 1, 2). There are 2 figures, 1 table, and 1 Soviet reference.

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskii institut
(Moscow Aviation-technological Institute)

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23015

1.9600 also 2408, 1418, 1413

S/536/60/000/043/006/011
E021/E435

AUTHORS: Livanov, V.A., Professor, Yelagin, V.I., Candidate
of Technical Sciences and Shteyninger, V.R., Engineer

TITLE: Study of Wrought Alloys of the Al-Mg System With
Additions of Manganese and Chromium

PERIODICAL: Moscow. Aviatsionnyy tekhnologicheskii institut.
Trudy. No.43. 1960. pp.68-85. Termicheskaya obrabotka
i svoystva stali i legkikh splavov

TEXT: A study of the influence of manganese and chromium
additions to aluminium alloys containing 6 to 9% magnesium on the
mechanical properties at room and elevated temperatures has been
carried out. The aim was to determine the optimum total quantity
and the optimum ratio of the manganese and chromium contents. X
Table 2 shows the alloys tested. Billets of the alloys were cast
by continuous casting at 280 mm/min. The casting temperature was
690 to 700°C. 50 mm were cut from both ends and rejected.
The billets were homogenized at 480°C for 36 hours. They were
machined, hot rolled to 6 mm thickness, annealed and cold rolled to
1.8 mm. Tensile tests were carried out at room and elevated
temperatures. All the samples tested were annealed at 350°C for
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Study of Wrought Alloys ...

1 hour and air cooled. The obtained results are tabulated and these were used to plot the effect of manganese and chromium contents on the mechanical properties for Mn + Cr contents of 0.8, 0.6 and 0.4%. The additions of manganese and chromium together have a greater effect than additions of the elements taken singly. When the total Mn + Cr content is 0.8%, the highest tensile strength at all temperatures is given by alloys containing 0.7% Mn and 0.1% Cr. The highest strength is shown by the alloy containing 9% Mg. The proof strength is less affected than the tensile strength but the best properties are obtained from alloys containing 0.6 to 0.7% Mn and 0.1 to 0.2% Cr. For a total Mn + Cr content of 0.6%, the highest tensile strength was obtained for alloys containing 0.5 to 0.4% Mn and 0.1 to 0.2% Cr. When the total Mn + Cr content is 0.4%, the difference in properties of the alloys containing from 0.4% Mn to 0.4% Cr is small. Microstructures are reproduced for alloys containing 7.5% Mg and 0.6% Mn + Cr. Alloys with up to 0.2% Cr consist of a solid solution, eutectic in the dendrite boundaries and in all probability small quantities of particles of manganese or chromium-manganese chemical compounds. In the alloy with 0.3% Cr, primary crystals of

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chromium-manganese appear. The number of these crystals increases with increase in chromium content. Fig.6 shows the effect of increasing Cr content on the lattice parameter of the solid solution in an alloy containing 7% Mg and 0.6% Mn + Cr (the continuous line is in the cast condition and the discontinuous line after homogenization). Fig.7 shows the change in micro-hardness for a similar alloy containing 7.5% Mg and 0.8% Mn + Cr, and Fig.8 is for an alloy containing 7.5% Mg and 0.6% Mn + Cr. The higher strength of the alloy containing 0.4% Mn and 0.2% Cr can be explained by the greater content of Mg and Mn in the solid solution. It is recommended that the alloys Al - 7.5% Mg - 0.4 to 0.6% Mn - 0.2% Cr and Al - 9% Mg - 0.2 to 0.4% Mn - 0.1% Cr should be subjected to further tests and should be tried in industrial conditions. There are 8 figures, 5 tables and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc. X

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23016

18.8300

2408, 4016, 1454

S/536/60/000/043/007/011
E021/E435

AUTHORS: Yelagin, V.I., Candidate of Technical Sciences and
Ekhina, Ye.V., Engineer

TITLE: Determination of the Tendency of Alloys of the Al-Mg
System to Corrosion Under Stress by Means of
Microstructure

PERIODICAL: Moscow. Aviatsionnyy tekhnologicheskii institut.
Trudy. No.43. 1960. pp.86-90. Termicheskaya obrabotka
i svoystva stali i legkikh splavov

TEXT: The tendency to corrosion cracking of ~~AMr~~ 6 (AMg6) alloy
(Al - 6.3% Mg - 0.6% Mn - 0.15% Ti - 0.2% Fe - 0.25% Si) in relation
to its structure was investigated. Strips, 210 x 15 x 2 mm, of the
alloy were heated at 350°C for 1 hour, water-cooled and then heated
at 50°C for 24 hours, 100°C for 24 hours, 200°C for 5 hours and
300°C for 5 hours. Some of the samples were quenched in water
from 450°C. The plates were bent in a loop and immersed in
3% NaCl and 0.1% H₂O₂ in water. The solution was changed after
every 15 days. The criterion of corrosion resistance was the time
taken for cracks to appear in the sample, visible to the naked eye.
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E021/E435

Determination of the Tendency ...

Cracking was not observed when the samples had been annealed at low (50, 100°C) or high (300°C) temperatures. The samples annealed at 200°C cracked after 16 days. Microstructural examination showed a clear connection between structure and tendency to corrode. Specimens were prepared by electrolytic polishing and etching in a 9% solution of H_3PO_4 for 30 min. The specimen quenched from 450°C was homogeneous (Fig.1a) after annealing at 350°C, there was a heterogeneous structure but the grain boundaries were not continuous (Fig.1b). Annealing at 50 and 100°C for 24 hours resulted in no change in structure; cracking did not occur after 125 days. Heating at 200°C for 5 hours gave the structure in Fig.1B. The grain boundaries are very sharp. The β -phase forms a continuous boundary round the grains - a structure unfavourable from the point of view of stress corrosion. Fig.2 shows the formation of an intercrystalline crack in this specimen. Heating at 300°C results in agglomeration of the precipitate and the β -phase is no longer continuous round the grains (Fig.12). The samples did not crack after 125 days. Thus microscopic analysis can be used as a method of control of the corrosion resistance of AMg6. This is

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Determination of the Tendency ...

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particularly important when samples have been subjected to a complex heat treatment. There are 2 figures, 1 table and 5 non-Soviet-bloc-references. The reference to the English language publication reads as follows: C.Edelany, J.Inst. of Metals, 1951, XII, v.80, p.187-191.

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35026
S/689/61/000/000/019/030
D205/D303

18.1210 (2408)

AUTHORS: Livanov, V.A., Yelagin, V.I., and Shreyninger V.P.

TITLE: Influence of the heating velocity during annealing on the properties of the AMg7-1 (AMg7-1) alloy

SOURCE: Fridlyander, I.N., V.I. Dobatkin, and Ye.D. Zakharov, eds. Deformiruyemye alyuminiyevyye splavy; sbornik statey, Moscow, 1961, 144 - 149

ABST: An investigation of the influence of the various annealing conditions on the mechanical and anti-corrosive properties of AMg7-1 alloy sheets. The investigated alloy contained (in %): 7.28 Mg, 0.6 Mn, 0.13 Cr, 0.003 Be, 0.16 Fe, 0.10 Si, 0.016 Cu, 0.043 Zn, the rest Al. It is the strongest among the weldable Al alloys. Ingots which were continuously cast, were hot-rolled to a 5 mm thickness, annealed and cold-rolled to 2 mm. Transversely cut-out specimens were annealed according to 2 regimes: 1) 1 hour at 350°C in air and cooling in air; 2) 1 hour at 350°C in salt-peter and cooling in air. The samples were then tested for tensile strength at various temperatures in the 20 - 300°C range. Card 1/2

Influence of the heating velocity

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D205/D303

500°C range. Strength of the air annealed samples was substantially lower than that of the samples annealed in the saltpeter bath (at 500°C, 10.5 and 11.7 kg/mm² respectively) while the relative elongation differed in an opposite manner (86 and 72.5 % respectively). It was microscopically observed that annealing in air gave coarser grain, while annealing in saltpeter gave a fine-grained, stronger structure. Corrosion tests in 3 % NaCl and 0.1 % H₂O₂ solution performed at total immersion, have shown that the corrosion of the fine-grained alloy which was annealed in saltpeter was many times greater than that of the specimens annealed in air. Thus, the time before the appearance of a visible crack was of the order of 1 minute in the first case and 3 to 6 days in the second case. There are 1 figure, 3 tables and 7 references: 1 Soviet-bloc and 6 non-Soviet-bloc. The reference to the English-language publication reads as follows: C. Edlany, J. Institute of Metals, 1951, v. 80, p. 187-191. 4

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30929
S/536/61/000/050/012/017
D217/D304

AUTHOR: Yelagin, V.I., Candidate of Technical Sciences, Docent
TITLE: Possibility of the application of silumins in the form of wrought alloys
SOURCE: Moscow. Aviatsionnyy tekhnologicheskii institut. Trudy, no. 50, 1961, Voprosy metallovedeniya, 124-130

TEXT: In the author's opinion, the application of silumins as wrought alloys is feasible. The purpose of this work was to study the behavior of a 5% Si-0.7% Mg - remainder Al alloy during treatment by pressure, to determine the dependence of mechanical properties of sheets on their thermal history and to establish the influence of additions of Mn, Cr, Mn + Cr, Zr and Zn on these properties. Additions of boron for refining the eutectic is not essential, since the high rate of crystallization on teeming ingots enables a sufficiently fine eutectic structure to be obtained even without B. Flat ingots, 540 x 100 x 35 mm, were teemed by continuous casting. Prior to rolling into sheet, the ingots were

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Possibility of the ...

homogenized at 490° for 24 hours. The surface layer of the ingots (approximately 2 mm) was removed by milling. Hot rolling of the ingots from a thickness of 29 mm to one of 6 mm was carried out at 410° C on two heats; the ingots were initially rolled to a thickness of 13 mm in 8 passes, and then the strips were reheated in a furnace to 410° C and rolled down to a thickness of 6 mm in 4 passes. Prior to cold rolling, the hot rolled strips were annealed at 320 C for 4 hours and cooled in air. Cold rolling of the strips from a thickness of 6 mm to 2 mm was carried out in 4 passes. The mechanical properties of the sheets were determined in the freshly quenched condition after ageing, using various methods. Quenching was carried out from 530 C in water, and in some cases, in air. The following ageing treatments were used; (1) soaking at 180° C for 2, 3, 4, 5, 6 and 10 hours; (2) soaking at 160 C for 16 hours; (3) soaking at 140° C for 30 hours and (4) natural ageing for 30 days. It is concluded that silumin alloys can be used for manufacturing wrought semi-finished goods. For the choice of compositions of wrought silumin alloys, special investigations are required, since those alloys which are best

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Possibility of the ...

suited for casting purposes may not prove to be satisfactory wrought alloys. A study of the corrosion resistance, plasticity and weldability of wrought semi-finished goods made in silumins must also be carried out. There are 5 tables and 2 non-Soviet-bloc references.

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30930
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D217/D304

AUTHORS: Yelagin, V.I., Candidate of Technical Sciences, Docent,
and Ekhina, Ye.V., Engineer

TITLE: Investigating the influence of composition on the mechanical properties of Avial' quenched at a reduced cooling rate

SOURCE: Moscow. Aviatsionnyy tekhnologicheskii institut. Trudy,
no. 50, 1961, Voprosy metallovedeniya, 131-146

TEXT: In the present work investigations were made of the following features of alloy composition under the given conditions: the influence of Mg and Si in the alloy AB (AV), of the Mg content of the ternary alloy Al-Mg-Si and of additions of Cu and Zn to the Avial' [Abstractor's note: An Al-Si-Mg alloy] alloys. The mechanical properties were tested in each case after optimum heat treatment (quenching in water and artificial ageing) and after air-cooling and similar ageing. Eight alloys were prepared for the experimental investigation, the compositions of which are

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Investigating the ...

shown in Table 1. Two flat ingots, were made from each alloy by means of continuous casting, each 500 x 100 x 35 mm. The ingots were homogenized at 530°C for 24 hours and hot rolled at 470°C into strip, 6 mm thick. The hot rolled strips were annealed at 300° for 3 hours and cold rolled to a thickness of 2 mm. The sheets obtained were cut into sections which were used for the preparation of specimens. All sections were heated to 530°C and held there for 40 minutes; one half of them were then water-quenched and the other half, cooled in air. Ageing of both groups was carried out by identical methods, namely (1) natural ageing for 7 and 14 days, (2) ageing at 160°C for 3, 6, 9, 12 and 15 hours. It was found that Avial' sheets (2 mm thick) free from additions apart from Mg and Si possess practically identical mechanical properties after quenching both in water and in air. However, the proof stress of air-quenched specimens after ageing at 160°C for 12-15 hours is somewhat higher than that of water-quenched specimens aged in the same manner. This is true for alloys of medium Mg and Si content (0.8 and 0.9%, respectively) and of higher Mg and Si content (1.0 and 1.2%, respectively). Mn which is one of the constituents of standard Avial' and causes a definite strengthening after water-quenching and ageing (artificial or natural), considerably

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D217/D304

Investigating the ...

weakens these alloys on air-quenching. The above weakening is observed with simple Avial's as well as with those containing additions of Cu (2%) and Zn (2%), the degree of weakening being the more pronounced the greater the Mn content. When high strength characteristics are required for components after air-cooling or after cooling by any other method which gives a rate slower than that obtained by water quenching, Mn-free Avial's are recommended (particularly for welded structures). Mn-free Avial's can be considered as self-quenching alloys. Avial's with an addition of 2% Zn deserve attention owing to the high mechanical properties exhibited by sheet after air quenching. Sheets of this alloy after quenching in air have practically the same strength as after quenching in water, the strength being greater than that of Zn-free Avial's. There are 13 figures, 3 tables and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. X

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Investigating the ...

Element content, % *Table 1*

<i>Alloys</i> Условное обозначение сплава	Содержание элементов в %					
	Mg	Si	Mn	Cu	Zn	Al
1	0,84	0,88	—	—	—	Remainder
2	1,06	1,20	—	—	—	Ост.
3	0,85	0,9	0,4	—	—	.
4	0,80	0,92	0,8	—	—	.
5	0,83	0,95	—	2,1	—	.
6	0,84	0,91	0,5	2,0	—	.
7	0,83	0,92	—	—	2,0	.
8	0,80	0,9	0,5	—	2,0	.

Table 1

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YELAGIN, V.I.

Effect of iron content on the "press-effect" in duralumin.
Issl. splav. tsvet. met. no.3:26-33 '62. (MIRA 15:8)
(Duralumin--Metallography)

LIVANOV, V.A.; YELAGIN, V.I.; EKHINA, Ye.V.

Effect of conditions of heat treatment and susceptibility to
corrosion under stress and the mechanical properties of
aluminum-magnesium alloys with a high magnesium content.
Issl. splav. tsvet. met. no.3:169-180 '62. (MIRA 15:8)
(Aluminum-magnesium alloys--Corrosion)
(Metals, Effect of temperature on)

ACCESSION NR.: AP4005827

S/0129/63/000/012/0021/0026

AUTHOR: Yelagin, V. I.; Averkina, N. N.

TITLE: Production of aluminum alloy sheets with a nonrecrystallized structure

SOURCE: Metalloved. i termich. obrab. metallov, no. 12, 1963, 21-26

TOPIC TAGS: aluminum alloy sheet, cold rolled sheet, sheet structure V95 aluminum alloy, D16 aluminum alloy, V92 aluminum alloy, ATsM aluminum alloy, alloy composition, sheet annealing, mechanical property, aluminum alloy, recrystallization, alloy sheet, nonrecrystallized alloy, recrystallization temperature

ABSTRACT: Standard V95 and D16 alloys and experimental V92 and ATsM alloys were used to study the mechanical properties cold rolled aluminum alloy sheets with an uncrystallized structure after hardening. Electric resistance furnaces were used in the preparation of alloys, with the resulting alloys casted

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ACCESSION NR.: AP4005827

and rolled to thickness of 6 mm. at 400 to 440C. After annealed at 400C, the hot rolled metal is cold rolled to 3, 2, and 1 mm. thickness. The recrystallization temperature of these sheets which was determined by X-ray analysis decreased with increasing deformation. It was found that the recrystallization temperatures of cold worked sheets from D16, V95 and V92 alloys were much lower than their prehardening temperatures. Extending the recovery period of these cold worked alloys did not alter their recrystallization temperatures. The recrystallization temperatures, however, were increased for D16 and V92 alloys when additives Cr, Ti and Zr were added (up to 0.2%) with Zr. having the most effective additive, but the temperature at the end of the recrystallization still fell far short of the hardening temperature. Ti and Zr additives to the V95 also lowered the recrystallization temperature somewhat. Orig. art. has: 3 figures and 2 tables

ASSOCIATION: None

SUB CODE: ML, MA

SUBMITTED: 00

DATE ACQ: 09Jan64

NO REF SOV.: 004

ENCL: 03

OTHER: 001

ACCESSION NR: AT4037646

S/2981/64/000/003/0046/0050

AUTHOR: Livanov, V. A.; Yelagin, V. I.; Shteyninger, V. R.

TITLE: Effect of beryllium admixtures on the properties of malleable magnalium with 9% Mg

SOURCE: *Alyuminiyevy*ye splavy**, no. 3, 1964, *Deformiruyemy*ye splavy** (Malleable alloys), 46-50

TOPIC TAGS: magnalium, malleable magnalium, magnalium mechanical property, magnalium oxidizability, beryllium admixture, aluminum, aluminum alloy, aluminum magnesium alloy

ABSTRACT: The effects of 0.001 - 1.0% Be on the oxidizability and mechanical properties of magnalium at room and high temperatures were studied on four alloys, each containing 9% Mg and varying amounts of Mn (0.4 - 0.6%), Ti (0.0 - 0.2%) and Cr (0.0 - 0.2%). Samples were obtained from continuously cast (280 mm/min, 690-700C) and homogenized (36 hrs, 480C) ingots, hot rolled crosswise to strips 6 mm thick, then lengthwise to sheets 1.8 mm thick. The sheets were annealed at 350C. Results indicate that Be in these concentrations does not affect tensile strength, relative elongation or yield point. The latter

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ACCESSION NR: AT4037646

improved to 22-24 kg/mm² after annealing in a niter bath (18 kg/mm² for furnace annealed samples). Beryllium contents of 0.003 to 0.005% proved quite useful in reducing oxidation during casting and homogenizing. Such admixtures are recommended for alloys containing 9% or even 6-7% Mg. Orig. art. has: 2 tables and 3 photographs.

ASSOCIATION: none

SUBMITTED: 00

SUB CODE: MM

DATE ACQ: 04Jun64

NO REF SOV: 000

ENCL: 00

OTHER: 000

Card 2/2

DRITS, M.Ye., doktor tekhn. nauk, otv. red.; BOGHWAR, A.A., akademik, red.; BELOV, A.F., doktor tekhn. nauk, red.; DOBATKIN, V.I., doktor tekhn. nauk, red.; MAL'TSEV, M.V., doktor tekhn. nauk, red.; FRIDLYANDER, I.N., doktor tekhn. nauk, red.; SVIDERSKAYA, Z.A., kand. tekhn. nauk, red.; YELAGIN, V.I., kand. tekhn. nauk, red.; BARBANEL', R.I., kand. tekhn. nauk, red.; SHAROV, M.V., kand. tekhn. nauk, red.; KADANER, E.S., kand. tekhn.nauk, red.; TROKHOVA, V.F., red.; CHERNOV, A.N., red.

[Metallography of light alloys] Metallovedenie legkikh splavov. Moskva, Nauka, 1965. 226 p. (MIRA 18:10)

1. Moscow. Institut metallurgii.

1. 22721
ACC NR: ATC010110 (4) SOURCE CODE: UR/0000/65/000/000/0054/0064.

AUTHOR: Yelagin, V. I.

ORG: none

TITLE: The role of zirconium in aluminum alloys

SOURCE: AM SSSR. Institut metallurgii. Metallovedeniya legkikh splavov (Metallography of light alloys). Moscow, Izd-vo Nauka, 1965, 54-64.

TOPIC TAGS: mechanical property, corrosion,
aluminum alloy, zirconium alloy / ATsM aluminum alloy

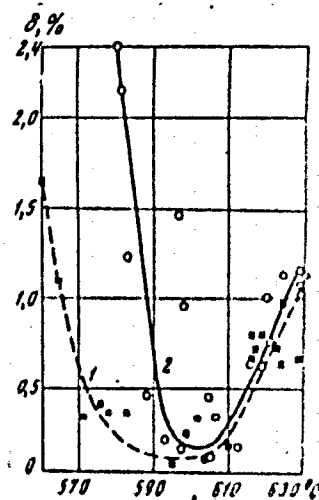
ABSTRACT: This review article discusses the role of zirconium in aluminum alloys. The effect of Zr on the properties of Al alloys is discussed under the following headings: zirconium as modifier; the influence of Zr on the recrystallization temperature and mechanical properties of Al alloys; the influence of Zr on the corrosion stability of Al alloys, and the influence of Zr on the stability of solid solutions in Al alloys. The various effects of Zr on Al alloys are illustrated by graphs (see Fig. 1), constructed on the bases of results obtained from a study of the alloy ATsM. The following people collaborated with the author in the study of the alloy ATsM: V. A. Livanov, V. I. Iordanskiy, T. A. Vlasova, Ye. V. Ekhina, V. R. Shteyninger, Yu. N. Skachkov, N. A. Martynova, N. N. Averkina, D. M. Rabkin, Yu. S. Yagupol'skaya, A. P. Ishchenko, Ye. I. Kutaytseva, G. A. Lukina, I. V. Dovbishchenko, and others.

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L 29791-66

ACC NR: AT6016410

Fig. 1. Dependence of the relative elongation of cast ATsM alloy without (1) and with (2) zirconium on the temperature.



Orig. art. has: 1 table and 11 figures.

SUB CODE: 11/ SUBM DATE: 16Sep65/ ORIG REF: 012/ OTH REF: 001

Card 2/2

L 42822-66 EWT(m)/EWP(w)/I/EWP(t)/ETI LJP(a) JD/JH
ACC NR: AP6028584 (A) SOURCE CODE: UR/0129/66/000/008/0015/0020

AUTHOR: Yelagin, V. I.

ORG: none

TITLE: Aging characteristics of alloys of the Al-Zn-Mg system

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 8, 1966, 15-20

TOPIC TAGS: aluminum zinc ^{containing} alloy, aluminum ^{base} alloy, ~~property~~, magnesium containing alloy, ~~alloy~~ ^{metal} heat treatment

ABSTRACT: The effect of aging conditions on the mechanical properties of Al-Zn-Mg alloys has been investigated. Seventeen alloys with zinc and magnesium contents varying from 2.87% to 4.02% and from 1.50% to 3.29%, respectively, and roughly constant manganese and zirconium contents of 0.5—0.6% and 0.15—0.20%, respectively, were tested. Specimens, cut from sheets 2 mm thick and angles 2.5 mm thick, were solution annealed at 450C and aged at 100C for 10 hr + 160C for 4 hr after being held at room temperature for five days (natural aging). It was found that even a small increase in the total zinc and magnesium content (from 4.8 to 6.0%) greatly affects the alloy response to natural aging (time interval between annealing and artificial aging). In alloys with a low total

Cord 1/3

UDC: 669.715'7'2:620.193.918'784

L 42822-66

ACC NR: AP6028584

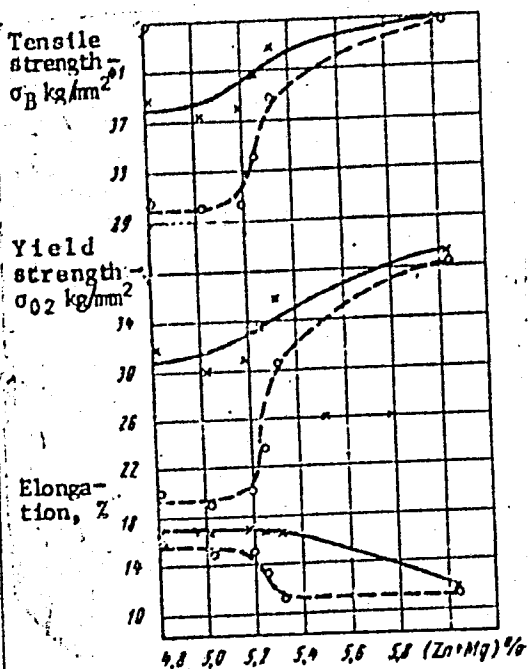


Fig. 1. Composition dependence of mechanical properties of Al-Zn-Mg alloys (Zn:Mg ratio of 1.9:2.2) aged at 100C 10 hr + 160C 4 hr (broken line) or at 20C for 5 days + at 100C for 10 hr + 160C for 4 hr (solid line).

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L 42822-66

ACC NR: AP6028584

zinc and magnesium content (4.8—6.0 depending on Zn:Mg ratio), natural aging prior to artificial aging increased the tensile strength by about 7—8 kg/mm² and the yield strength by 10—11 kg/mm², and in some cases slightly increased ductility (see Fig. 1). In general, the lower the total content of zinc and magnesium, the greater is the effect of natural aging. The strength of Al-Zn-Mg alloys with Zn + Mg content of 4.8—5.3% and a Zn:Mg ratio of 1.5:2 or with Zn + Mg content of 6—6.5% and a Zn:Mg ratio of 1:0.9 is not improved by artificial aging, unless it is preceded by natural aging. Orig. art. has: 3 figures and 1 table.

[TD]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 003/ OTH REF: 004

HTD Press 5065

Card 3/3

L 35871-66 EWT(m)/EWP(t)/ETI IJP(c) JH/JD/WH/XG/WB 5
 ACC NR: AP6021486 SOURCE CODE: UR/0413/66/000/011/0128/0128
 INVENTOR: Rabkin, D. M.; Yagupol'skaya, L. N.; Langer, N. A.; Dovbishchenko, I. V.;
Nikitina, A. V.; Zotova, L. M.; Martynova, N. A.; Yelagin, V. I.; Ishchenko, A. Ya.;
Bondar', V. V.
 ORG: none
 TITLE: Filler-wire for argon-shielded arc welding of aluminum.²⁷ Class 49, No. 182487
 [announced by the Electric Welding Institute im. Ye. O. Paton (Institut elektrosvarki)]
 SOURCE: Izobreteniya, promyshlennyye obratzay, tovarnyye znaki, no. 11, 1966, 128
 TOPIC TAGS: welding, aluminum ~~wire~~, arc welding, argon, ~~shielded arc welding~~,
 welding wire, aluminum wire, ~~chromium-containing wire~~, ~~zirconium-containing wire~~
~~corrosion resistance~~, ~~chromium containing alloy~~, ~~zirconium containing alloy~~
 ABSTRACT: This Author Certificate introduces a filler-wire for argon-shielded arc
 welding of aluminum. To improve the weld corrosion resistance, the wire contains
 0.8—1.2% chromium and 0.7—1.2% zirconium.¹⁶ [ND]
 SUB CODE: 11, 13/²⁷ SUBM DATE: 25Dec62/⁷ ATD PRESS: 5036
 Card 1/1 111- UDC: 621.791.753.93.042

1 06705-07 ENH(R)/CAT(H)/T/DAF(W)/ENF(L)/REF TGT(C) CE

ACC NR: AP6029674

(N)

SOURCE CODE: UR/0136/66/000/008/0081/0086

AUTHOR: Dobatkin, V. I.; Yelagin, V. I.

ORG: none

TITLE: Aluminum-high melting metal alloys from rapidly cooled alloy shot

SOURCE: Tsvetnyye metally, no. 8, 1966, 81-86

TOPIC TAGS: aluminum ~~manganese~~ alloy, ~~aluminum~~ iron alloy, ~~aluminum~~ chromium alloy, zirconium containing alloy, ~~alloy shot~~, ~~alloy shot property~~, ~~alloy shot metal~~ extrusion, *manganese alloy*

ABSTRACT: Small granules, 1—6 mm in diameter, of several experimental aluminum alloys were obtained by centrifuging liquid (700—750C) alloys in a perforated container and immediately water quenching the alloy drops. The alloys contained 5 or 10% manganese (Al5Mn and Al10Mn) or 12% iron (Al10Fe), or 1, 1.5 or 2.0% each of chromium and zirconium (Al1Cr1Zr, Al1.5Cr1.5Zr, and Al2Cr2Zr) i.e., several times more than the limit of solid-state solubility of these elements in aluminum. The estimated average cooling rate varied from 5000C/sec for granules 3.0—3.5 mm in diameter to 18,000C/sec for granules 1mm in diameter. The Al5Mn, Al1Cr1Zr and Al1.5Cr1.5Zr granules were found to have homogeneous or almost homogeneous structures of solid solution. In the other alloys, dendritic formation of intermetallic phases was observed. Granules encased in an aluminum envelope were hot extruded into bars

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UDC: 669.715'24/29:620.18

L 05705-67

ACC NR: AP6029674

10.5—24 mm in diameter. The structure of the bars was roughly similar to that of aged aluminum alloys. The best combination of mechanical properties, especially at elevated temperatures, was shown by aluminum-chromium-zirconium alloys, which had at room temperature a tensile strength of 22.6—36.0 kg/mm², a yield strength of 21.3—32.1 kg/mm², and an elongation of 11.3—13.2%. Corresponding figures for 350C were 9.2—9.8 kg/mm², 8.5—9.6 kg/mm² and 24.0—39.2%; and for 500C—3.2 to 4.7 kg/mm², 2.9 kg/mm² and 19.8—38.2%. The 100-hr rupture strength of these alloys varied from 9.0 to 9.5 kg/mm² at 250C, from 4.2 to 4.5 kg/mm² at 350C, and was 1.1 kg/mm² for all three alloys at 500C. Orig. art. has: 4 figures and 3 tables. [DV]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001/ ATD PRESS: 5069

Card 2/2

ACC NR: AT6036423

SOURCE CODE: UR/2536/66/000/066/0136/0146

AUTHOR: Yelagin, V. I. (Candidate of technical sciences); Ekhina, Ye. V. (Engineer)

ORG: none

TITLE: Investigation of alloys of the Al-Zn-Li system

SOURCE: Moscow. Aviatsionnyy tekhnologicheskii institut. Trudy, no. 66, 1966. Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 136-146

TOPIC TAGS: ternary alloy, aluminum base alloy, zinc, lithium, metal aging, metal heat treatment, weldability, lithium containing alloy, zinc containing alloy

ABSTRACT: Considering that the replacement of Mg with Li in Al-Cu-Mg alloys has resulted in the synthesis of new alloys with a satisfactory complex of properties, it was of interest to investigate the effect of the replacement of Mg with Li in alloys of the Al-Zn-Mg system which recently have begun to be employed as high-strength weldable alloys. Accordingly, alloys of the Al-Zn-Li system, containing 4.5% Zn, 0.5% Mn and 0.5 to 1.5% Li were subjected to mechanical tests whose results were satisfactory and which showed that these

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UDC: 669.017:669.71'5'884

ACC NR: AT6036423

alloys are hardened by heat treatment (quenching and aging). The optimal quenching temperature for these alloys was found to be 520-530°C. Natural aging for 30 days does not significantly alter their strength characteristics, but affects to a relatively greater extent the alloys with the lowest Li content (0.5%). Artificial aging of these alloys, on the other hand, was found to be the more effective the higher their Li content. Of the investigated alloys the strongest one proved to be the alloy with 4.5% Zn, 0.5% Mn, 1.0% Mg and 0.5% Li, which after quenching and aging at 120°C for 48 hr displayed the following properties: ultimate strength $\sigma_B = 35$ kg/mm², yield point $\sigma_{0.2} = 28.1$ kg/mm², elongation per unit length $\delta = 10.9\%$. The highest values of strength for the alloy with 1.5% Li were achieved after artificial aging at 140°C for 96 hr ($\sigma_B = 26.7$ kg/mm², $\sigma_{0.2} = 20.4$ kg/mm², $\delta = 7.3\%$). The addition of Cd. (0.2%) to these alloys accelerates the process of aging and enhances the effect of this process. The addition of Mg to these alloys sharply enhances the effect of both natural and artificial aging. Further, it would be of interest to investigate alloys of this system (Al-Zn-Li) with higher Li content (>1.5% Li) to see whether their strength characteristics might not be even higher. Orig. art. has: 4 tables, 4 figures.

SUB CODE: 11 / SUBM DATE: none/ ORIG REF: 004/ OTH REF: 001

Card 2/2

137-58-4-8159

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 257 (USSR)

AUTHORS: Voronov, S. M., Yelagin, V. M.

TITLE: Phase Transformations Occurring on Homogenizing in Aluminum Alloys Containing Manganese (Fazovyie prevrashcheniya pri gomogenizatsii v alyuminiyevykh splavakh sodержashchikh marganets)

PERIODICAL: V sb.: Metallurg. osnovy lit'ya legkikh splavov, Moscow, Oborongiz, 1957, pp 360-379

ABSTRACT: Pure Al and AMts alloys containing 1 and 2% Mn, as well as D16 containing 0, 0.4, and 0.9% Mn were investigated. The mechanical properties of the alloys after various heat-treatment regimes were studied, and metallographic investigation and X-ray structural analysis of Mn contents in the solid solution and the degree of recrystallization in extruded rods both in the process of extrusion and in subsequent heat treatments were performed. On the homogenizing of alloys containing Mn, the processes of dissolution are accompanied by the process of decomposition of the solid solution of Mn in Al. Extended homogenizing of ingots resulting in a marked break-up of the solid solution and coagula-

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137-58-4-8159

Phase Transformations Occurring (cont.)

tion of the manganese particles liberated therefrom leads to a pronounced reduction in the strength characteristics of bars extruded from such ingots. The press effect can be eliminated completely when homogenization of the ingots is of a specific duration. It is confirmed that the greater strength of extruded products after quenching and aging is due to two causes: 1) the dispersed particles of manganese compounds accumulated along the grain boundaries and within the grains, and the manganese remaining in solid solution increase the recrystallization temperature of the alloy to such a degree that it becomes higher than the quenching temperature. After quenching, the extruded objects retain the deformation texture and a [111] orientation; 2) the dispersed particles of the manganous chemical compounds themselves exercise a definite degree of hardening effect.

L. M.

1. Aluminum--Phase studies
2. Aluminum alloys--Phase studies

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S/125/61/000/009/009/014
D040/D113

AUTHORS: Andreyeva, G.F., Voskan'yan, B.Kh., Yelagin, V.M., Kuznets, I.I.,
Rad'ko, E.P. (Moscow)

TITLE: Automatic ASG-NITI welders

PERIODICAL: Avtomaticheskaya svarka, no.9, 1961, 51-59

TEXT: Design and operation is described of an АСГ-ННТИ (ASG-NITI) welder developed by the Nauchno-issledovatel'skiy tekhnologicheskii institut (Scientific Research Institute of Technology) and demonstrated in 1960 at the VDNKh exhibition. It is designed for argon-arc welding large sheet structures of nonmagnetic or low-magnetic metal (aluminum and titanium alloys, stainless steel), with tungsten electrode and with or without filler wire. Its tracing system moves the welding head along the joint with \pm 0.25 mm accuracy when the joint deviates not more than 10 mm per meter from straight line, and maintains the arc length (by voltage), with voltage control accuracy of 0.25 v. The welder is provided with TV, remote controlled, can weld circular seams. Manual control is also provided. The АСГ-2 (ASG-2) welding head, illustrated with a block diagram and a close-up view photo-
✓

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Automatic ASG-NITI welders

S/125/61/000/009/009/014
D040/D113

graph, may be used on any analogous automatic welders. The new tracing principle suggested by T.B.Shcherbanenko and D.A.Mikhaylov, requires no especially prepared line traced parallel to the joint, as required by all other automatic machines with photoelectric tracing systems. The tracing element is an inductive pickup (Fig.3) with two coils on one magnetic circuit. The coils are supplied with alternating current and produce alternating magnetic field that causes eddy currents in metal edges being joined. The article gives detailed engineering information and includes the circuit diagram of the tracing system and four photographs. There are 7 figures.

SUBMITTED: April 1, 1961

Card 2/3

VOSKAN'YAN, B.Kh. (Moskva); YELAGIN, V.M. (Moskva)

New automatic ASG-NITI welding sets with follower system. Avtom. svar.
16 no.2:65-67 F '63. (MIA 16:4)
(Electric welding—Equipment and supplies) (Automatic control)

1. YELAGIN, V. P., Engs; AFENDULI, K. P.
2. USSR 600
4. Punching Machinery
7. Machine for simultaneous punching of holes in motorcycle shields, Vest, mash,
32, No.9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

YELAGIN, V.P., inzh.; VERZHBINSKAYA, I.I., inzh., red.; FREGER, D.P., tekhn. red.

[Using balls in cold hardening surfaces of nonrigid shaped parts;
practices of the Kiev Motorcycle Plant] Naklep sharikami poverkhnostei
nezhestkikh profil'nykh detalei; opyt Kievskogo mototsikletnogo zavoda.
Leningrad, 1955. 31 p. (Leningradskii dom nauchno-tekhnicheskoi
propagandy. Informatsionno-tekhnicheskii listok, no.82(770))

(MIRA 10:12)

(Metals--Cold working)

POZDNYAKOV, Mikhail Alekseyevich; KARZINKIN, Sergey Ivanovich; YELAGIN, Y.P.
inzhener, retsenzent; MUKHIN, P.V., inzhener, redaktor; SOROKA, M.S.,
redaktor

[M-72 motorcycle] Motosikl M-72. Izd. 2-oe, perer. 1 dop. Kiev, Gos.
nauchno-tekhn.izd-vo mashinestroit. lit-ry, 1957. 231 p. (MLRA 10:10)
(Motorcycles)

YELAGIN, Ye. B.

88-88-1/5

AUTHOR: Popov, Yu. A., Candidate of Technical Sciences, Docent, Editor

TITLE: Foreword (Predisloviye)

PERIODICAL: Trudy Moskovskogo Aviatsionnogo Instituta, 1957, Nr 88: Some Problems of Electric Drive and Thermal Protection of Electric Motors (Nekotoryye voprosy elektroprivoda i temperaturnaya zashchita elektrodvigately), pp. 3-4 (USSR)

ABSTRACT: The articles included in the collection are the result of the scientific research of members of the staff of the Moscow Aviation Institute and concern the problems of electric drive and thermal protection of motors. The following articles are included in this collection: (1) Polyakova, G. Ya., Engr. Synchronous Electric Servomechanism in Aircraft; (2) Tomashevskiy, M. A., Candidate of Technical Sciences. Force Transmitted in an Electromagnetic Clutch with a Ferromagnetic Filler; (3) Petrov, B. I., Candidate of Technical Sciences. Two-Phase Induction Motor Operating as a Servomotor in a Servomechanism; (4) Kolosov, S. P., Candidate of

Card 1/2

Forward (Cont.)

88-88-1/5

Technical Sciences, and Yelagin, Ye. B., Engr. Thermal Protection of Electric Motors with Thermocouples; The collection is to be used by engineers and technicians working in design and calculation of electric machinery and installations and as a manual for students of advanced courses in electrical engineering institutes and faculties.

AVAILABLE: Library of Congress

Card 2/2

YELAGIN, Ye. B.

88-88-5/5

AUTHORS: Kolosov, S. P., Candidate of Technical Sciences, Yelagin, Ye. B.,
Engr.

TITLE: Thermal Protection of Electric Motors with Thermocouples
(Temperaturnaya zashchita elektrodvigateley s pomoshch'yu termopar)

PERIODICAL: Trudy Moskovskogo Aviatsionnogo Instituta, 1957, Nr 88: Some
Problems of Electric Drive and Thermal Protection of Electric
Motors (Nekotoryye voprosy elektroprivoda i temperaturnaya
zashchita elektrodvigateley), pp. 55-61 (USSR)

ABSTRACT: The authors present the principle of the thermal protection of
motors on the basis of a direct control of the temperature of
the windings. The performance of the system is analyzed and a formula
determining the errors occurring is presented. According to
I.A. Syromyatnikov, all other principles of the thermal protection
of motors are in fact reduced to the above principle of direct
control of the windings' temperature. The simplest control is

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88-88-5/5

Thermal Protection of Electric Motors with Thermocouples (Cont.)

obtained with thermocouples. Recently, semiconductor thermocouples have been intensively developed. Their application permits simplifying greatly the installation and at the same time improves the reliability of this kind of protection. The much higher efficiency of semiconductor thermocouples permits applying even neutral electromagnetic relays or feed the disconnecting windings of commutating installations directly from thermocouples. In all these cases the emf of the thermocouple directly connected with the winding at any moment of time almost exactly corresponds to the windings' temperature. However, because of design considerations, it is desirable to isolate the thermocouple from the copper which results in the appearance of considerable thermal resistance. The authors present (Fig. 1, p. 57) the character of the heating processes of the motor windings and of the thermocouple in emergency conditions. The curve (1) presenting the overheating of the winding has an approximately linear character; the curve (2) presenting the overheating of the thermocouple and, consequently, its emf, lies below curve (1) at a considerable lag. The value of this lag can be significantly diminished and eventually reduced to zero by introducing three thermocouples connected in series, instead of one. Fig. 2, p. 57, presents a schematic diagram of the placing of the thermocouples. Another method of reducing the lag consists in selecting thermocouples with different time

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88-88-5/5

Thermal Protection of Electric Motors with Thermocouples

constants. The authors consider unnecessary the use of bimetallic elements built into the stator "as is done by certain American firms" (p. 56). The authors derive a differential equation of the heating process and an equation of the total emf generated by two thermocouples connected in series. They find the value of the error in steady state conditions. The maximum value of error for a system of two thermocouples is found to equal half the value of the error of one thermocouple. The authors claim that the installation of the thermal protection in the windings does not present difficulties and that this system of protection can be also used for other types of electrical machinery. The method of protection suggested permits an easy introduction if automatic correction of the placement of the protecting system when external factors change. This makes it possible to utilize the overloading capabilities of electrical machinery to their full extent. There are 2 diagrams and 4 Soviet references.

AVAILABLE: Library of Congress

Card 3/3

AUTHOR: Yelagin, Ye.B., Aspirant SOV/144-59-7-9/17
TITLE: Thermal Protection of Electrical Apparatus and Machines
With the Aid of Thermistors

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,
Elektromekhanika, 1959, Nr 7, pp 59-65 (USSR)

ABSTRACT: In the usual applications of thermistors to the problem of detecting dangerous temperatures the unavoidable thermal insulation between, for example, a copper conductor and the thermistor, introduces an error in measurement which is a function of the rate of change of temperature. This cannot be allowed for by setting a bridge to have a false null-position because the setting will be valid for only one rate of change. The difficulty can be avoided by using thermistors with similar temperature characteristics but different thermal time constants, as in Fig 1. Fig 2 shows how the bridge output-voltage and current vary with rate of change of temperature when the time constants are equal and zero. In Fig 1 by correctly choosing the ratio between the
Card 1/3 ampere-turns of the relay windings an arrangement can be designed which is independent of the rate of change of

SOV/144-59-7-9/17

Thermal Protection of Electrical Apparatus and Machines With the Aid of Thermistors

temperature over a wide range. It is often possible to calculate the rates of change of temperature which correspond to safe working and to a dangerous condition. It is then possible to arrange that in the latter case a warning is given earlier. The temperature dependence of a thermistor resistance is Eq (1) which can be replaced by Eq (2) for temperature intervals of a few tens of degrees. If Eq (3) is the differential equation for thermistor heating (neglecting self-heating), a linear approximation is Eq (4). If the thermistors in the bridge have thermal time-constants in the ratio of $n:1$ then the variation in output voltage with time is Eq (10), and the current flowing into the bridge is Eq (13). If it is supposed that the resistance of the winding I on the relay is an order less than the least resistance of the thermistor and that of winding II is an order higher than the greatest resistance, then the total ampere-turns required is Eq (16) in terms of the voltage and current from Eqs (10) and (13) respectively. The condition for independence of temperature-rate leads to a ratio of ampere-turns as in Eq (21). A further technique in

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SOV/144-59-7-9/17

Thermal Protection of Electrical Apparatus and Machines with the
Aid of Thermistors

Card 3/3 designing thermally-sensitive bridges is to feed the
bridge itself from a temperature-dependent voltage
divider.

There are 2 figures and 5 Soviet references.

ASSOCIATION: Moskovskiy aviatsionnyy institut
(Moscow Aviation Institute)

SUBMITTED: May 26, 1959

BALASHOV, M.A.; VORONKOV, B.S.; YELAGIN, Ye.B.; KISELEV, L.N.; KOLOSOV, S.P.; LEONT'YEVA, V.P.; NEFEDOVA, V.I.; STROMILOV, V.M.; SOKOLOV, N.I.; TISHCHENKO, N.M.; UDALOV, N.P.; PETROV, B.N., akademik, red.; GRIGORASH, K.I., red. izd-va; ROZHIN, V.P., tekhn. red.

[Handbook on the design of components and systems of automatic control; a manual for the preparation of course and diploma projects] Rukovodstvo po proektirovaniu elementov i sistem avtomatiki; posobie po kursovomu i diplomnomu proektirovaniu [By] M.A.Balashov i dr. Pod red. B.N.Petrova. Moskva, Gos. nauchno-tekhn. izd-vo Oborongiz. No.4. 1961. 311 p.

(MIRA 15:3)

1. Moscow. Aviatsonnyy institut imeni Sergo Ordzhonikidze.
(Automatic control) (Electronics)

38120
9/143/62/000/006/004/008
D238/D308

94320

AUTHOR: Yelagin, Ye. B., Engineer

TITLE: Synthesis of the simplest thermistor circuits

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Energetika,
no. 6, 1962, 37-44

TEXT: In designing equipment based on the relay effect in a thermistor circuit (thermal relays, time relays, pulse generators, etc.) it is necessary to select the circuit parameters in such a way as to obtain a transient process in the circuit with the selected type of thermistor having a given shape and duration and there arises the problem of elementary circuit synthesis. When a thermistor is heated by the current flowing through it, the time for establishing equilibrium in the circuit and the form of the transient process depend on the ratio of the power supplied to the thermistor and the power dissipated by it at each moment in time. Starting from the thermal balance equation for calculating the transient processes in an elementary circuit in the form:

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Synthesis of the ...

S/143/62/000/006/004/008
D238/D308

$$\frac{d\Theta}{dt} = \frac{U^2}{H} \cdot \frac{R_T}{(R_T + R_D)^2} - \frac{\Theta}{\tau} \quad (1) \quad \checkmark$$

where Θ is the temperature rise above the surrounding medium; H - the thermal capacity of the thermistor; τ - the thermal time constant, equal to H/b ; b - the mean dissipation factor, the equation is reduced to a form with dimensionless time. For known circuit parameters, the temperature of the medium and selected type of thermistor, the parametric curve can be constructed and from this the transient process can be constructed. The location of the minimum point on the parametric curve will have a basic influence on the duration of the transient process and the coordinates of the maximum point on the rate of current rise along the relay section. The parametric curve can be approximated with sufficient accuracy for practical purposes by two trapeziums, the areas of which are

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Synthesis of the ...

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determined by the coordinates of the extremum points of the curve. Consequently, if the coordinates of the extremum points are expressed in terms of the circuit parameters and the coefficients of the selected type of thermistor, then by varying these the desired form of parametric curve can be selected. A numerical example is given. Satisfactory accuracy of the method is demonstrated. There are 1 table and 4 figures.

ASSOCIATION: Moskovskiy ordena Lenina aviatsionnyy institut imeni
S. Ordzhonikidze (Moscow Order of Lenin Institute
of Aviation imeni S. Ordzhonikidze) X

SUBMITTED: April 4, 1961

Card 3/3

YELAGIN, Ye.B., inzh.; ZHURAVLEVA, V.N., kand.tekhn.nauk

Use of nomograms in the calculation of networks
with thermistors. Izv. vys. ucheb. zav.; energ.
5 no.10:131-136 0 '62. (MIRA 15:11)

1. Moskovskiy ordena Lenina aviatsionnyy institut imeni
S. Ordzhonikidze.

(Electric networks)

YELAGIN, Ye.B., inzh.

Calculation of an elementary circuit containing a thermistor with fluctuating power supply voltage. Izv. vys. ucheb. zav.; energ. 6 no.3:99-103 Mr '63. (MIRA 16:5)

1. Moskovskiy ordena Lenina aviatsionnyy institut imeni S.Ordzhonikidze.

(Electric networks)

(Thermistors)

ACC NR: AP6029379

(A,N)

SOURCE CODE: UR/0346/66/000/006/0018/0019

AUTHOR: /Zagorodnov, M. V.; Mustafayev, G. A.; Shapkin, V. A.; Yelagina, Ye. B. 24

ORG: [Zagorodnov; Mustafayev] State Scientific Control Institute of Veterinary Preparations (Gosudarstvennyy nauchno-kontrol'nyy institut veterinarnykh preparatov); [Shapkin] Main Administration, Biological Industry, MSKh SSSR (Glavnoye upravleniye biologicheskoy promyshlennosti MSKh SSSR); [Yelagina] Kursk Biological Plant (Kurskaya biofabrika)

TITLE: /Effect of prolongators on the activity of hyperimmune⁶ foot-and-mouth disease serum

SOURCE: Veterinariya, no. 6, 1966, 18-19

TOPIC TAGS: hoof and mouth disease, serum, experiment animal, virus, immunization, diagnostic drug

ABSTRACT: Hyperimmunization of guinea pigs with a suspension of foot-and-mouth disease virus containing aluminum hydroxide (AH) and a saponin greatly increases the activity of diagnostic serum, regardless of the virus type. In the authors' experiments, the optimum dose of AH was 1%, that of the saponin 0.5%. Hyperimmunization of guinea pigs with a virus suspension containing 1% AH yielded type O serum with a titer of 1:60; types A and C, 1:80. Hyperimmunization of the animals with 0.5% saponin yielded type O serum with a titer of 1:110 to 1:150; type A, 1:140 to 1:170; type C, 1:170. A pronounced inflammatory reaction was noted at

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UDC: 619.616.988.43-077.34

I. 40175-66

ACC NR: AP6029379

the injection site following injection of virus with 1% AH or 0.5% sponin. With increase in AH or saponin content, necrosis developed in the inflammatory focus and some of the guinea pigs died. Orig. art. has: 2 tables. [JPRS: 36,932]

SUB CODE: 06 / SUBM DATE: none

56-6-48,56

AUTHOR NEMIROVSKIY, P.E.; YELAGIN, YU.P.

TITLE The Computation of the Polarisation of Neutrons by Means of a Nuclear Model with Smeared-out Boundary. (Raschet polarizatsii neytronov po modeli yadra s raznytyim krayem.- Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 32, Nr 6, pp 1583-1583 (U.S.S.R.)

ABSTRACT Experiments on the polarization of 400 MeV neutrons have been investigated by R.K. ADAIR et al., Phys. Rev. 96, 503 (1954) on the basis of the optical nuclear model with rectangular potential. Such a method of investigation does however, not take into account the basic properties of the spin-orbit-interaction which in reality has to exist only on the surface of the nucleus. Therefore the spin-orbit interaction can be investigated as proportional to $(i/r) (dV/dr) (1\sigma)$, where V denotes the depth of the potential well within the nucleus. The amount of the spin-orbit-interaction here depends upon the dimensions of the nucleus. This circumstance could not be taken into account in the computations carried out by ADAIR et al. Here the following potential was selected:

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56-6.48, 56

The Computation of the Polarization of Neutrons by Means of a Nuclear Model with Smeared-out Boundary.

$$V = V_0 (1 + 1/r) = \text{const. at } r \leq r_0.$$

$$V = V_0 e^{-\alpha(r-r_0)} (1 + ca/r_0) \text{ at } r \gg r_0.$$

Here a slight potential jump exists at $r=r_0$, which fact, however, is not essential. For the purpose of simplifying computations, the factor $1/r$ was replaced by the constant $1/r_0$, which represents a satisfactory approximation for heavy nuclei. The constant c of the spin-orbit coupling was assumed to be equal to $3,3 \cdot 10^{-27}$. The polarization was computed by means of the known formulae, viz. by the assumption that only the s- and p-phases are different from zero. The d-phase was nearly equal to zero in the domain investigated here. Polarization was investigated on the occasion of the scattering at an angle of 90° in the direction of the impinging bundle. The results are shown in form of a diagram. The experimental points are located within the domain of the maximum between the computed curves which confirms the

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56-6-48/56

The Computation of the Polarization of Neutrons by
Means of a Nuclear Model with Smeared-out Boundary.

best agreement with the experiment at $0,05 < \xi < 0,1$.
Thus, the following was shown: With one and the same
constant of the spin-orbit interaction, scattering
on light and also on heavy nuclei can be described.
(With 1 Illustration)

ASSOCIATION: Academy of Science of the U.S.S.R.
(Akademiya nauk S.S.S.R.- Russian)

PRESENTED BY: -

SUBMITTED: 16.3.1957

AVAILABLE: Library of Congress.

CARD 3/3

85692

S/056/60/038/006/035/049/XX
B006/B070

24.4500

AUTHOR: Yelagin, Yu. P.

TITLE: Polarization of Nucleons Scattered by Nuclei With Non-zero Spin

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
Vol. 38, No. 6, pp. 1870-1871

TEXT: The optical method is used to study the polarization of nucleons scattered by nuclei of non-zero spin. It is shown that such nuclei produce an additional polarization of the nucleons scattered by them, as compared to spin-zero nuclei. The polarization of nucleons scattered from spin-zero nuclei was studied by Adair et al. (Ref. 2). For the functions describing the final state,

$$\psi_f = \frac{1}{\sqrt{2(2I+1)}} \sum_{m_s m_I} f(m_s m_I | m_s m_I, 1' m) \chi_{I'}^{m_I'} \chi_{s'}^{m_s'} y_{\ell'}^m(\theta, \varphi)$$

is obtained from the phase-shift analysis for a nucleus with spin $I \neq 0$ in the case of an unpolarized beam and an unpolarized target.

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Polarization of Nucleons Scattered by
Nuclei With Non-zero Spin

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B006/B070

χ_s^m are the spin functions, $f(...|...)$ the scattering amplitude from a state characterized by the first set to a state characterized by the second set of quantum numbers. The polarization of the particles after the scattering is given by

$\vec{P} = (\phi_f^* \vec{\sigma} \phi_f) / (\phi_f^* \phi_f)$, where $\vec{\sigma}$ is a vector whose components are the Pauli matrices for the particles s (nucleons). Equation (4) is obtained by substituting (2) in (3). For a specific case $I = I' = 1/2$ and considering only s - and p -phases ($l \leq 1$), expression (5) is obtained by averaging.

Here, η_{jj}^I is the coefficient for a diverging wave with the momentum j' originating from a converging wave with the momentum j , both waves belonging to the intermediate system with the total momentum J . In the phase shifts, the subscript 1 corresponds to the state $p_{3/2}$, the subscript 2 to the state $p_{1/2}$, and the subscript 0 to the s -state. The first term in (5) gives the polarization of a particle scattered by a spin-zero nucleus,

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Polarization of Nucleons Scattered by
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and is equal to the expression obtained by Adair. The second term gives the additional polarization of the particle when the nucleus has a non-zero spin. The second term becomes zero when I is put equal to 0. The additional polarization can be experimentally observed on two nuclei having about the same optical properties, one of which is even-even ($I=0$) and the other odd ($I \neq 0$). For this purpose Pb^{207} and Pb^{208} are suggested. P. E. Nemirovskiy is thanked for discussions. There are 3 references: 2 Soviet and 1 British.

SUBMITTED: January 14, 1960

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$$\frac{d\sigma}{d\Omega}(P_x + iP) = \frac{e^{i\varphi}}{2I+1} \sum_{m_s m_l m_l'} \left\{ \sum_{L L'} f(m_s m_l L 0 \mid \frac{1}{2} m_l' l' m')^* \times \right. \\ \left. \times f(m_s m_l L' 0 \mid -\frac{1}{2} m_l' l' m') \right\} P_l^m(\cos \theta) P_l^{m'}(\cos \theta). \quad (4)$$

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$$\frac{d\sigma}{d\Omega} P = \text{const } e^{i\varphi} \text{Im} \left\{ \frac{\sqrt{2}}{3} (\eta_{22} - \eta_{11})^* (1 - \eta_{00}) P_0 P_1^1 + \frac{2\sqrt{2}}{3} [2|\eta_{11}|^2 - |\eta_{22}|^2 - \right. \\ \left. - \eta_{11}\eta_{22}^* + 3(\eta_{22} - \eta_{11})] P_1^0 P_1^1 \right\} - \text{const } e^{i\varphi} \text{Im} \{ 4\eta_{11}^* \eta_{12} - 3\eta_{11}\eta_{12}^* + 3\sqrt{2}|\eta_{21}|^2 - \\ - 6\sqrt{2}|\eta_{12}|^2 - 2\sqrt{2}\eta_{12}\eta_{21}^* \} \frac{P_1^0 P_1^1}{30} = P_{\text{not}} + P_{\text{don}}, \quad (5)$$

Card 4/4

YELAGIN, Yu.P.; LYUL'KA, V.A.; NEMIROVSKIY, P.E.

Neutron force function in an optical model. Zhur.eksp.i teor.fiz.
41 no.3:959-962 S '61. (MIRA 14:10)
(Neutrons) (Nuclear models)

44234

S/056/62/043/006/033/067
B125/B102

26.2342

AUTHOR: Yelagin, Yu. P.

TITLE: Polarization in inelastic neutron scattering

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 6 (12), 1962, 2166-2169

TEXT: Such polarization can be calculated by considering spin - orbital interaction in the theory of D. M. Chase et al. (Phys. Rev., 110, 1080, 1958) is considered. For elastic scattering and with $150 < A < 190$, polarization agrees better with experimental data when calculated according to the theory thus generalized. The Hamiltonian.

$H = -(\hbar^2/2m)\nabla^2 + T_{\text{rot}} + V(r, \theta) + H_{\text{SO}}$ of the proposed system differs from the Hamiltonian by Chase et al. as regards the spin-orbital interaction

$H_{\text{SO}} = \frac{\hbar}{r} \frac{\partial V(r, \theta)}{\partial r} (\vec{r} \cdot \vec{s})$. T_{rot} is the operator of the rotational state of the target nucleus with the eigenfunctions $D_{MK}^I(\theta_1)$; (r, θ, φ) are the

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B125/B102

Polarization in inelastic ...

coordinates of the neutron with respect to the characteristic axis of the nucleus and $V(r, \theta')$ is the interaction potential between neutron and deformed nucleus. For simplicity only even-even nuclei are investigated, ($I = 1, K = 0$). If the wave function

$$\Psi_{IM} = \sum_{I' r} \frac{1}{r} \psi_{I' r}^{I' 0}(r) Y_{I' r}^{IM}(\theta, \varphi; \theta_i; s_i). \quad (3),$$

which corresponds to the partial entrance channel with the angular momentum j and the spin projection M of the incident neutron, is substituted into the equation $H \Psi_{jM} = E \Psi_{jM}$, and if the potential $V(r, \theta')$ is expanded in a series, a system of differential equations for the radial functions $\psi_{I' j}^{I' 0}$ follows. The relative polarization of the inelastically scattered neutrons (with excitation of the level I' of the target nucleus) reads: $P_{I'}(\theta) = (1/s) \langle f_{I'}^* \sigma f_{I'} \rangle / (d\sigma_{I'} / d\Omega)$. $f_{I'}(\theta)$ is the amplitude of the scattering through the angle θ with excitation of the rotational level I' . The elastic polarization is determined by the matrix element $\langle f_0^* \sigma f_0 \rangle$. The first summand of the differential scattering cross

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B125/B102

Polarization in inelastic ...

section $d\sigma_{I'}/d\Omega = \langle f_{I'}^*, f_{I'} \rangle + d\sigma_{I'}^{\text{comp}}/d\Omega$ with excitation of the level I' corresponds to the optical scattering, and the second summand to the scattering with excitation of a compound nucleus. Polarization was calculated for 380-kev neutrons for the potential

$$V(r, \theta') = -V_0 \left[\left[1 + \exp \frac{r-R(\theta')}{a} \right]^{-1} + \zeta \exp \left\{ -\left(\frac{r-R(\theta')}{b} \right)^2 \right\} \right], \quad (12).$$

$$R(\theta') = R_0 [1 + \beta Y_{20}(\theta')], \quad R_0 = 1.245 A^{1/2} \phi; \quad a = 0.65 \phi, \quad b = 1 \phi, \quad \zeta = 0.1.$$

When $I' \neq 0$, $P_{I'}$ is not small compared to P_0 . No comparison with experiment is possible yet as no experimental data exist for the polarization

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Polarization in inelastic ...

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of inelastic neutrons. Coincidence of the $P_0(\theta)$ curves with the experimental data was improved by considering the deformation. There are 3 figures.

SUBMITTED: June 21, 1962

X

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Yelashin, Yu. P.

L 17019-63

EPF(n)-2/ENT(m)/BDS AFFTC/ASD/SSD Pu-4 AR
S/185/63/008/004/001/015

AUTHOR: Yelashin, Yu. P. and Nemyrovs'kyi, P. E. 62

TITLE: An optical model to represent cross-sections of radiative capture and inelastic neutron scattering 19

PERIODICAL: Ukrayins'kyi fizychnyy zhurnal, v. 8, no. 4, April 1963, 418-425

TEXT: A theory is proposed to describe resonance capture in the energy range from several kev up to 1 mev; lower energies are associated with separate resonances, and an optical model is not adaptable in these cases. The upper boundary of the range is largely determined by the inelastic scattering and depends upon the nucleus-target levels. The authors assume that inelastic scattering with excitation of separate levels for $E < 1$ mev can be regarded in the same way as elastic scattering. There are 14 equations, 6 figures, and 1 table.

ASSOCIATION: Institut atomnoy energii im. I. V. Kurchatova (Institute for Atomic Energy im. I. V. Kurchatov, Moscow)

SUBMITTED: August 31, 1962

Card 1/1

24.6580

S/056/63/044/001/061/067
B102/B186

AUTHOR: Yelagin, Yu. P.

TITLE: Comparison of the strength functions and polarization of neutrons in various optical models

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 1, 1963, 371 - 375

TEXT: The results of numerical calculations for optical models with volume or surface absorption are compared. The optical potential $U(r) = V(r) + iW(r)$ allows for various forms of its components. For $V(r)$ the Peshbach-Porter-Weisskopf (Phys. Rev. 96, 448, 1954) or the Woods-Saxon (Phys. Rev.

95, 577, 1954) formulation $V(r) = -V_0 \left[1 + \exp\left(\frac{r-R}{a}\right) \right]^{-1}$ are used; for the imaginary part the most promising forms are $W(r) = \xi V(r)$ and $W(r)$

$= -W_0 \exp\left(\frac{r-R}{b}\right)^2$, where R is the nuclear radius. The strength functions for the s- and p-waves are calculated with the Woods-Saxon real potential and

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Comparison of the strength...

S/056/63/044/001/061/067
B102/B196

both forms of the imaginary parts in order to find out if the lowering of the minimum of the strength function is common for all reasonable potentials with surface absorption or is specific for a certain form of the potential. The calculations were made with an M-20 (M-20) computer using a standard set of nuclear parameters and the results are compared graphically. It is found that surface absorption does lower the minimum in the region of $A \sim 100$. For surface (volume) absorption $\min(p_{3/2}) > (<) \min(p_{1/2})$.

Also the polarizations are calculated and compared with the experimental results of Clement et al. (Nucl. Phys. 6, 177, 1958) for 380-kev neutrons. The experimental data are somewhat better described by the surface-absorption model, the difference between the two models is, however, not great, particularly at low energies. There are 4 figures.

SUBMITTED: August 24, 1962

Card 2/2

NEMIROVSKIY, P.E.; YELAGIN, Yu.P.

Cross sections for elementary processes with large absorption. Zhur. eksp.
i teor. fiz. 44 no.3:1099-1105 Mr '63. (MIRA 10:3)
(Collisions (Nuclear physics))

KAGAN, D.F.; YEKHALKOV, S.V.

Investigation of glued joints of vinyl tubes. Sbor.trud.NIIST
no.8:64-81 '61. (MIRA 15:5)
(Pipe, Plastic)

YEKH, Ch.; ZHABROVA, G. M.; ROGINSKIY, S. Z.; SHIBANOVA, M. D.

Change of emanation capacity and the separation of the surface-
labeling radioactive gas during dehydration of hydroxides.
Radiokhimiia 4 no.3:355-364 '62. (MIRA 15:10)

(Thorium--Isotopes) (Hydroxides)
(Radiochemistry)

YEKH, Ch.; ZHABROVA, G.M.; ROGINSKIY, S.Z.; SHIBANOVA, M.D.

Emanation capacity and the liberation of the surface gas tag in
the thermal decomposition of copper, nickel, and thorium oxalates.
Dokl. AN SSSR 164 no.6:1343-1346 O '65.

(MIRA 18:10)

1. Institut khimicheskoy fiziki AN SSSR i Institut fizicheskoy
khimii Akademii nauk Chekhoslovatskoy Sotsialisticheskoy
Respubliki. 2. Chlen-korrespondent AN SSSR (for Roginskiy).

YEKCHANIN, G.M.

Composition and age of the basal layer in the Byskarskaya series
of the Sarala Valley (Kuznetsk Ala-Tau). Geol.i geofiz. no.7:83-88
'63. (MIRA 16:10)

1. Krasnoyarskoye geologicheskoye upravleniye.

YEKCHANIN, Yevgeniy Vladimirovich; ZHADNOVA, Vera Petrovna; MITALEV, Igor' Aleksandrovich; UMANTSEV, D.F., red.; GRIN', Ye.R., tekhn. red.

[Methods for the quantitative study of the tectogenesis of platform structures of the 3d order based on seismic prospecting data] Metod kolichestvennogo izucheniia tektogeneza platformnykh struktur III poriadka po materialam seismorazvedki. Red. D.F.Umantsev. Novosibirsk, Sibirskii nauchno-issl. in-t geol. geofiziki i mineral'nogo syr'ia, 1961. 29 p,

(MIRA 15:12)

(Geology, Structural) (Seismic prospecting)

YEKHANIN, Ye.V.; ZHADNOVA, V.P.

Methods for quantitative studies of tectonic structures of the
third order in the West Siberian Plain based on seismic
prospecting data. Trudy SNIIGGIMS no.17:51-69 '61. (MIRA 15:9)
(West Siberian Plain—Geology, Structural)
(West Siberian Plain—Seismic prospecting)

YEKHAMIN, Ye.V.; BEN'KO, Ye.I.

Seismic prospecting data on Mesozoic and Cenozoic tectonic
movements in the middle Irtysh Valley. Trudy SNIIGGINS no.1:152-
160 '59. (MIRA 15:4)
(Irtysh Valley--Geology, Structural)
(Seismic prospecting)

DERBIKOV, I.V.; AGUL'NIK, I.M.; BEN'KO, Ye.I.; YEKHANIN, Ye.V.; GRISHIN, M.P.;
YUSHIN, V.I.

Tectonics of the Mesozoic and Cenozoic mantle of the Western Siberian
Lowland. Trudy SNIGGIMS no.11:63-155 '60. (MIRA 14:5)
(Siberia, Western—Geology, Structural)

BEN'KO, Ye.I.; YEKHANIN, Ye.V.; ZHADNOVA, V.P.; MITALEV, I.A.

Periodicity in tectonic movements. Geol. nefi. i gaza 9 no.7:
33-35 Je '65. (MIRA 18:12)

1. Sibirskiy nauchno-issledovatel'skiy institut geologii,
geofiziki i mineral'nogo syr'ya, Novosibirsk.

YEKHICHEV, O. I.; ZINCHENKO, I. S.; KARNAUKHOV, I. M.; SLABOSPITSKIY, R. P.; TARANOV,
A. Ya. 4

"A Source of Polarized Deuterons."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22
Feb 64.

KhFTI (Ukrainian Physico Technical Inst)

~~I. 7257-66~~ EWT(1)/EPA(sp)-2/EPT(c)/EPA(w)-2 AT
ACC NR: AP5025906 SOURCE CODE: UR/0057/65/035/010/1897/1901

AUTHOR: ^{44, 55}Yeklichev, O.I.; ^{44, 55}Zinchenko, G.N.; ^{44, 55}Zinchenko, N.S.; ^{44, 55}Karnaikhov, I.M.; ^{44, 55}Slabospitskiy, R.P. 79
26
13

ORG: none

TITLE: Mass spectrometric investigation of a source of positive ions operating at a low gas pressure

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 10, 1965, 1897-1901

TOPIC TAGS: ion source, hydrogen ion, helium, ^{21, 44, 55}ion beam focusing, chromatic aberration

ABSTRACT: This paper reports tests of an ion source, discussed in more detail elsewhere (G.N. Zinchenko. Diplomnaya rabota, KhGU, 1962), which operates at gas pressures from 10^{-4} to 10^{-6} mm Hg. The ion source employs an electron gun using a flat tungsten-barium cathode with a 2 mm diameter emitting surface, a focusing electrode, and a plane accelerating electrode located 0.5 cm from the cathode and having a 2 mm diameter opening through which the electrons enter the ionizing region. The electron beam is caught on a flat collector located 6 cm from the gun. A negative potential is applied to the collector so that ions formed in the region between the gun and the collector are attracted toward the collector and enter the accelerating tube through

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L 7737-66

ACC NR:

AP5025906

3

a 5 mm diameter opening in the electrode. In the accelerating tube the ions were accelerated to 40 keV and focused on a point 150 cm distant. The focusing problem was somewhat complicated by the fact that the ions entered the accelerating tube with a rather wide range of energies, owing to the design of the ion source. Two different focusing systems were designed and tested, one employing an immersion lens and one employing two successive accelerating gaps. The design of these systems, which was accomplished with the aid of conventional design equations, is discussed at some length. Both performed satisfactorily. It was anticipated that owing to the low pressure in the ionizing region the production of multiply charged ions by successive ionization would be negligible. In order to test this the currents of singly and doubly charged He^3 ions were measured with a mass spectrometer as functions of the pressure of He^3 in the ion source. Both currents increased linearly with the pressure, and at the same rate, for pressures up to 10^{-4} mm Hg. The ratio of the He^{++} to the He^+ current was 5×10^{-3} ; this is in good agreement with the known ratio of the corresponding cross sections for He^4 . The maximum He^{++} current obtained was $0.02 \mu\text{A}$; this current was obtained with an electron beam current of 10 mA and a He^3 pressure of 10^{-4} mm Hg. The H^+ and H_2^+ ion currents were also measured when the ion source contained H_2 . Both currents increased linearly with pressure for pressures up to 5×10^{-5} mm Hg, but deviations from linearity were observed at higher pressures. The authors thank A.Ya.Taranov for his interest in the work. Orig. art. has: 1 formula, 7 figures, and 1 table. 44-5

SUB CODE: NP/ SUBM DATE: 30Dec64/ ORIG REF: 004/ OTH REF: 002

Card 2/2

ACC NR: AP6019615

SOURCE CODE: UR/0048/66/030/002/0249/0234

AUTHOR: Storizhko, V.Ye.; Yekhichev, O.I.; Popov, A.I.; Slabospitskiy, R.P.

ORG: Physicotechnical Institute, Academy of Sciences, UkrSSR (Fiziko-tekhnicheskii institut Akademii nauk UkrSSR)

TITLE: Inelastic scattering of protons by Ne-21. Spin and parity of the first excited state of Ne-21. /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 249-254

TOPIC TAGS: proton scattering, inelastic scattering, gamma ray, nuclear energy level, neon,

ABSTRACT: The inelastic scattering of 1 to 3 MeV protons on Ne²¹ was investigated in order to obtain information concerning the excited states of the Na²² compound nucleus and to determine the spin and parity of the 350 keV first excited state of Ne²¹. An enriched (30% Ne²¹ and 70% Ne²⁰ and Ne²²) target of neon embedded in a 0.1 mm thick tantalum substrate was employed. The 90° yield of 350 keV gamma rays was determined as a function of incident proton energy. Some 60 resonances were observed, and the energies, widths, and relative intensities of 24 of them are tabulated. The resonances at proton energies below 2.3 MeV were mostly well separated, and their energies

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were determined with an accuracy of 5 keV; the resonances at higher proton energies were not well separated and they were not investigated further. Angular distributions of the 350 keV gamma rays associated with the different resonances were measured and the coefficients A_2 and A_4 in the expression $1 + A_2 P_2(\cos \theta) + A_4 P_4(\cos \theta)$ for the angular distribution are tabulated for 19 of the resonances. For all but 7 of the resonances the value obtained for A_4 was less than its probable error, and for only one of the resonances did A_4 exceed its probable error by as much as a factor 2. From that it is concluded that the spin of the 350 keV level does not exceed $5/2$. Theoretical, angular distributions were calculated with different assumptions concerning the spin and parity of the 350 keV Ne^{21} level and the characteristics of the Na^{22} states and are discussed at length in connection both with the present measurements and with data in the literature. It is concluded that the spin and parity of the 350 keV Ne^{21} level are $5/2^+$. The authors thank M.I. Guseva for providing the Ne^{21} target. Orig. art. has: 2 formulas, 2 figures and 4 tables.

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